

TSMC-00-823



October 1, 2001

To: Commissioner of Patents and Trademarks
Washington, D.C. 20231

Fr: George O. Saile, Reg. No. 19,572
20 McIntosh Drive
Poughkeepsie, N.Y. 12603

2814
#3 / IDS
11-7-01
R. S. S.

Subject:

Serial No. 09/912,739 07/26/01

Pei-Haw Tsao, Jones Wang,
Ken Chen

GROOVED HEAT SPREADER FOR STRESS
REDUCTION IN IC PACKAGE

Grp. Art Unit: 2812

INFORMATION DISCLOSURE STATEMENT

Enclosed is Form PTO-1449, Information Disclosure Citation
In An Application.

The following Patents and/or Publications are submitted to
comply with the duty of disclosure under CFR 1.97-1.99 and
37 CFR 1.56. Copies of each document is included herewith.

U.S. Patent 5,905,633 to Shim et al., "Ball Grid Array
Semiconductor Package Using a Metal Carrier Ring as a Heat
Spreader," discloses a heat spreader with grooves.

U.S. Patent 6,158,502 to Thomas, "Thin Planar Heat
Spreader," discloses a heat spreader with grooves.

U.S. Patent 6,117,352 to Weaver et al., "Removal of a Heat Spreader from an Integrated Circuit Package to Permit Testing of the Integrated Circuit and Other Elements of the Package," disclose an etched heat spreader.

The following two U.S. Patents all disclose related heat spreaders:

- 1) U.S. Patent 6,011,304 to Mertol, "Stiffener Ring Attachment with Holes and Removable Snap-In Heat Sink or Heat Spreader/Lid."
- 2) U.S. Patent 5,949,137 to Domadia et al., "Stiffener Ring and Heat Spreader for Use with Flip Chip Packaging Assemblies."

U.S. Patent 5,484,959 to Burns, "High Density Lead-on-Package Fabrication Method and Apparatus," discloses a method and apparatus for fabricating thermally and electrically improved electronic integrated circuits by laminating one or more lead frames to a standard integrated circuit package such as, for example, thin small outline package (TSOP).

Sincerely,



Stephen B. Ackerman,
Reg. No. 37761